

IN THE CLAIMS

Claim 1 (Previously Presented) A fully vulcanized thermoplastic elastomer, comprising a rubber phase and a plastic matrix, wherein an average particle size of the rubber phase of said fully vulcanized thermoplastic elastomer is $0.02\mu \sim 1\mu$, wherein a shape of the rubber phase of said fully vulcanized thermoplastic elastomer is spheroidic, wherein the weight ratio of the rubber phase to the plastic matrix is 30:70 to 75:25, wherein the rubber phase of said fully vulcanized thermoplastic elastomer comprises at least one rubber selected from the group consisting of natural rubber, styrene-butadiene rubber, carboxylated styrene-butadiene rubber, nitrile rubber, carboxylated nitrile rubber, polybutadiene rubber, chloroprene rubber, silicone rubber, acrylic rubber, styrene-butadiene-vinylpyridine rubber, isoprene rubber, butyl rubber, polysulfide rubber, acrylic-butadiene rubber, polyurethane rubber, and fluorine rubber, and wherein the rubber phase is provided by a fully vulcanized powdery rubber prepared by vulcanizing a corresponding rubber latex with irradiation.

Claims 2 - 5 (Cancelled)

Claim 6 (Previously Presented) The fully vulcanized thermoplastic elastomer according to claim 1, wherein said rubber phase has a gel content of at least 60% by weight.

Claim 7 (Previously Presented) The fully vulcanized thermoplastic elastomer according to claim 1, wherein the plastic matrix of said fully vulcanized thermoplastic elastomer comprises at least one polymer or copolymer thereof selected from the group consisting of

polyamide, polypropylene, polyethylene, polyvinyl chloride, polyurethane, polyester, polycarbonate, polyoxymethylene, polystyrene, polyphenylene oxide, polyphenylene sulfide, polyimide and polysulfone.

Claim 8 (Cancelled)

Claim 9 (Previously Presented) A process for preparing a fully vulcanized thermoplastic elastomer, which comprises the steps of (i) providing a fully vulcanized powdery rubber as a first starting material, and (ii) blending the fully vulcanized powdery rubber with plastic as a second starting material, wherein the fully vulcanized powdery rubber is prepared by vulcanizing a corresponding rubber latex with irradiation, wherein the shape of the fully vulcanized powdery rubber is spheroidic, wherein said fully vulcanized powdery rubber comprises at least one rubber selected from the group consisting of fully vulcanized powdery natural rubber, fully vulcanized powdery styrene-butadiene rubber, fully vulcanized powdery carboxylated styrene-butadiene rubber, fully vulcanized powdery nitrile rubber, fully vulcanized powdery carboxylated nitrile rubber, fully vulcanized powdery polybutadiene rubber, fully vulcanized powdery chloroprene rubber, fully vulcanized powdery silicone rubber, fully vulcanized powdery acrylic rubber, fully vulcanized powdery styrene-butadiene-vinylpyridine rubber, fully vulcanized powdery isoprene rubber, fully vulcanized powdery butyl rubber, fully vulcanized powdery polysulfide rubber, fully vulcanized powdery acrylic-butadiene rubber, fully vulcanized powdery polyurethane rubber, and fully vulcanized powdery fluorine rubber, and wherein the weight ratio of the fully vulcanized powdery rubber to the plastic is 30:70 to 75:25.

Claim 10 (Previously Presented) The process according to claim 9, wherein the weight ratio of fully vulcanized powdery rubber to plastic is 50:50 to 75:25.

Claims 11 to 13 (Cancelled)

Claim 14 (Previously Presented) The process according to claim 9, wherein the average particle size of the fully vulcanized powdery rubber is $0.05\mu\sim 0.5\mu$.

Claim 15 (Cancelled)

Claim 16 (Previously Presented) The process according to claim 9, wherein said plastic comprises at least one polymer or copolymer thereof selected from the group consisting of polyamide, polypropylene, polyethylene, polyvinyl chloride, polyurethane, polyester, polycarbonate, polyoxymethylene, polystyrene, polyphenylene oxide, polyphenylene sulfide, polyimide and polysulfone.

Claim 17 (Cancelled)

Claim 18 (Previously Presented) A method comprising preparing a moulded article with the vulcanized thermoplastic elastomer of claim 1.

Claim 19 (Previously Presented) The fully vulcanized thermoplastic elastomer according to claim 1, wherein the average particle size of said rubber phase is $0.05\mu\sim 0.2\mu$.

Claim 20 (Previously Presented) The fully vulcanized thermoplastic elastomer according to claim 1, wherein the weight ratio of the rubber phase to the plastic matrix is 50:50 to 75:25.

Claim 21 (Previously Presented) The fully vulcanized thermoplastic elastomer according to claim 6, wherein the rubber phase has a gel content of at least 75% by weight.

Claim 22 (Previously Presented) The process according to claim 14, wherein the average particle size of the fully vulcanized powdery rubber is 0.05 μ -0.2 μ .

Claim 23 (Previously Presented) The fully vulcanized thermoplastic elastomer according to claim 1, wherein said fully vulcanized thermoplastic elastomer is prepared by a process comprising the steps of: (i) providing a fully vulcanized powdery rubber, which is prepared by vulcanizing a corresponding rubber latex with irradiation and (ii) blending the fully vulcanized powdery rubber with a plastic, wherein a weight ratio of the fully vulcanized powdery rubber to the plastic is 30:70 to 75:25.

Claim 24 (Previously Presented) The process according to claim 9, wherein the first starting material consists essentially of the fully vulcanized powdery rubber and the second starting material consists essentially of the plastic.

Claim 25 (Previously Presented) The fully vulcanized thermoplastic elastomer according to claim 1, wherein the average particle size of said rubber phase is

0.05 μ ~0.5 μ .

Claim 26 (Cancelled)

Claim 27 (Previously Presented) The process according to claim 9, wherein the average particle size of the fully vulcanized powdery rubber is 0.02 μ ~1 μ .

Claim 28 (Currently Amended) The process according to claim 9, wherein the average particle size of the fully vulcanized powdery rubber is 0.02 μ ~1 μ .

Claim 29 (Cancelled)

Claim 30 (Previously Presented) A fully vulcanized thermoplastic elastomer prepared by blending a rubber that is powdery and fully vulcanized with a plastic to form the elastomer with a rubber phase and a plastic matrix, wherein the fully vulcanized powdery rubber that is blended with the plastic is prepared by vulcanizing a latex comprising the rubber with irradiation whereby the rubber phase is formed with particles having a shape that is spheroidic and more regular than if the rubber phase were formed by dynamic vulcanization by means of a cross-linking agent and intense shear stress during blending of the rubber and the plastic, wherein an average particle size of the particles in the rubber phase of said fully vulcanized thermoplastic elastomer is 0.02 μ - 1 μ , and wherein the rubber phase of said fully vulcanized thermoplastic elastomer comprises at least one rubber selected from the group consisting of natural rubber, styrene-butadiene rubber, carboxylated styrene-butadiene rubber, nitrile rubber, carboxylated nitrile rubber,

polybutadiene rubber, chloroprene rubber, silicone rubber, acrylic rubber,
styrene-butadiene-vinylpyridine rubber, isoprene rubber, butyl rubber, polysulfide rubber,
acrylic-butadiene rubber, polyurethane rubber, and fluorine rubber.